

## DE PLANTIS TOXICARIIS E MUNDO NOVO TROPICALE COMMENTATIONES XV

Desfontainia: a new Andean hallucinogen

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In 1965, Dr. Carlos Mariani Ramírez (*Témas de Hipnosis*, 362–363, tab. 23, Editorial Andres Bello, Santiago, Chile) published a most interesting report which stated that the leaves of *Desfontainia spinosa* var. *Hookeri* are employed in Chile as a narcotic and stomachic. He further maintained that the leaves are as bitter as gentian and that the local Mapuche Indians use them as a source of yellow dye in their textiles. The vernacular names of this shrub in Chile are *taique*, *chapico*, *michai blanco* and *trautrau*. An excellent drawing of the plant accompanied the report in lieu of a voucher specimen.

On the basis of this Chilean record, *Desfontainia* has recently been included in several books on hallucinogenic plants (Schultes, R.E., *Hallucinogenic Plants* (1976) 150–151, Golden Press, New York; Schultes, R.E. in [B.M. DuToit, Ed.] *Drugs, Rituals and Altered States of Consciousness* (1977) 48, 263, A. A. Balkema, Rotterdam; Schultes, R. E. in [P. T. Furst, Ed.] *Flesh of the Gods* (1972) 52, Praeger Publishers, New York; Schultes and Hofmann, *The Botany and Chemistry of Hallucinogens* (1973) 219; W. A. Emboden, Jr., *Narcotic Plants* (1972) 76, tab. 63. Macmillan Co., New York).

During my years of ethnobotanical studies in Colombia, I was able twice to collect *Desfontainia spinosa* with annotations concerning its use as a native hallucinogen. In both cases, the use was centered in the Valle de Sibundoy, a mountain-girt valley at 6700 feet, east of the Colombian city of Pasto. The valley is the abode of Kamsá and Ingano Indians and is an area where native



medicine men make unusually extensive use of hallucinogens (species of *Datura* [*Brugmansia*], *Methysticodendron Amesianum*, *Iochroma fuchsioides*) in their magico-medical practices.

It is not easy, however, to procure much information on *Desfontainia*, partly because it represents an hallucinogen which, unlike the others employed in the region, is wild, apparently never cultivated. It grows in the moors or *páramos* surrounding the valley, and medicine men must go afield to secure their supply of leaves.

The first time that I learned of the narcotic use of *Desfontainia* was in 1942, when, while collecting in the Páramo de Tambillo, northeast of the Valle de Sibundoy, one of my guides — the son of a shaman — volunteered the information that native medicine men took a tea of the leaves of *D. spinosa*, known locally as *borrachera de páramo*, when they “want do dream.” Later, in 1953, while collecting in the Páramo de San Antonio on the road between Pasto and Sibundoy, several Indians volunteered the information that “in Sibundoy, witch doctors use a tea of the leaves to see visions and diagnose illness.” One Indian indicated that the medicine men “go crazy” when they take the drink.

There is an urgency to learn more about this drug plant, as native lore in the region is fast disappearing. I have on several occasions questioned local medicine men about the plant but have met with reluctance to discuss its use. This reluctance in itself is an indication possibly that its employment is held more in secret because of a very special place that the plant holds in magico-medical practice.

No psychoactive constituent is as yet known from the genus *Desfontainia*. Material from several herbarium specimens of *D. spinosa* from Argentina, Chile, and Ecuador have been spot-tested with Dragendorff reagent for alkaloids with what appear to be negative results. These reports of similar use in such distant points in the Andes, however, tend to suggest that the genus does actually possess psychoactive principles.



Voucher specimens are enumerated as follows:

COLOMBIA: Comisaría del Putumayo, Páramo de Tambillo, nordeste del Valle de Sibundoy, 2700–2800 m. “Tree. Flowers: sepals red, petals yellow. *Borrachero de páramo*.” December 13–14, 1942. *R. E. Schultes et C. E. Smith* 3127.

Comisaría del Putumayo, Páramo de San Antonio, road from Pasto to Sibundoy, 9300–9600 feet. “Bush, Sepals vermillion, petals yellow.” March 13, 1953. *R. E. Schultes et I. Cabrera* 18898.

While there is little doubt that the two Colombian collections do represent *Desfontainia spinosa*, what other species and varieties occur in Colombia is not yet clear.

The genus *Desfontainia* and its species have long been enigmatic. *Desfontainia* was described by Ruíz and Pavón in 1794 and placed in Linnaeus’ *Pentandria monogynia* (Fl. Peru. Chil. Prodr. (1794)29). Humboldt and Bonpland suggested that it belonged in the Solanaceae (Pl. Aequin. 1(1808)157). Most taxonomists of the first half of the past century tended to follow this concept. D. Don, however, allocated it to the Gentianaceae (Edinb. Phil. Journ. (1831)274). Meisner placed it uncertainly in the Aquifoliaceae (Gen. Pl. 1 (1839)252). Endlicher located it at the end of the Solanaceae but indirectly (as “Tubiflorae Incertae Sedis”) suggested that it represented a distinct family: Desfontainiaceae (Gen. Pl. 1(1839)669; Enchiridion (1841)336). In 1856, Bentham placed it in the Loganiaceae (Journ. Linn. Soc. 1(1856)97), as did Bentham and Hooker twenty years later (Gen. Pl. 2(1876)794). Hutchinson included the genus in the family, Potaliaceae, in 1959 (Fam. Fl. Pl., Ed. 2(1959)371; Ed. 3(1973)460). Leeuwenberg, in his monograph of the genus, has maintained it in Loganiaceae, placing it in a distinct tribe Desfontainieae near the Potalieae and Retzieae (Acta Bot. Néerl. 18(1969)669–679). Chemotaxonomically, the tendency has been to place *Desfontainia* in the Loganiaceae (Hegnauer, R., *Chemotaxonomie der Pflanzen* 4(1966)414; Gibbs, R.D., *Chemotaxonomy of Flowering Plants* 3(1974)1332). Most modern taxonomists appear to have accepted *Desfontainia* as a member of the monotypic family Desfontainiaceae (e.g., Solereder in Engler and Prantl Natürl. Pflanzenfam. 4(2)(1895)50; Hallier, Medel. Rijksherb. Leiden (1911)28; Pulle, Compendium . . . (1950)333; Lawrence, Tax. Vasc. Pl. (1951)667; Johnson, Tax. Fl. Pl. (1931)484; Weberbauer, Mund. Veg.



Andes Peru. (1945); Muñoz P., Sin. Fl. Chilena, Ed. 2(1966)96. Melchior (in Engler, Syllab. Pflanzenfam., Ed. 12, 2(1964)408) has kept Desfontainiaceae, but has noted that the systematic position is still not clear. Similarly, Takhtajan (Flow. Pl., Origins and Dispersal (transl. Jeffrey) (1969)203) maintains Desfontainiaceae as a separate family but remarks: "relationships not very clear". Macbride (Field Mus. Nat. Hist. Bot. Ser. 13, pt. 5, no. 1 (1959)249) and Skottsberg (Bot. Ergebnisse (1916)287) have retained *Desfontainia* in the Loganiaceae. Airy Shaw, however, continues to assign the genus to the Potaliaceae (in Willis, Dict. Fl. Pl. Ferns, Ed. 8(1973)350). At the present time, I prefer to accept the monotypic family Desfontainiaceae.

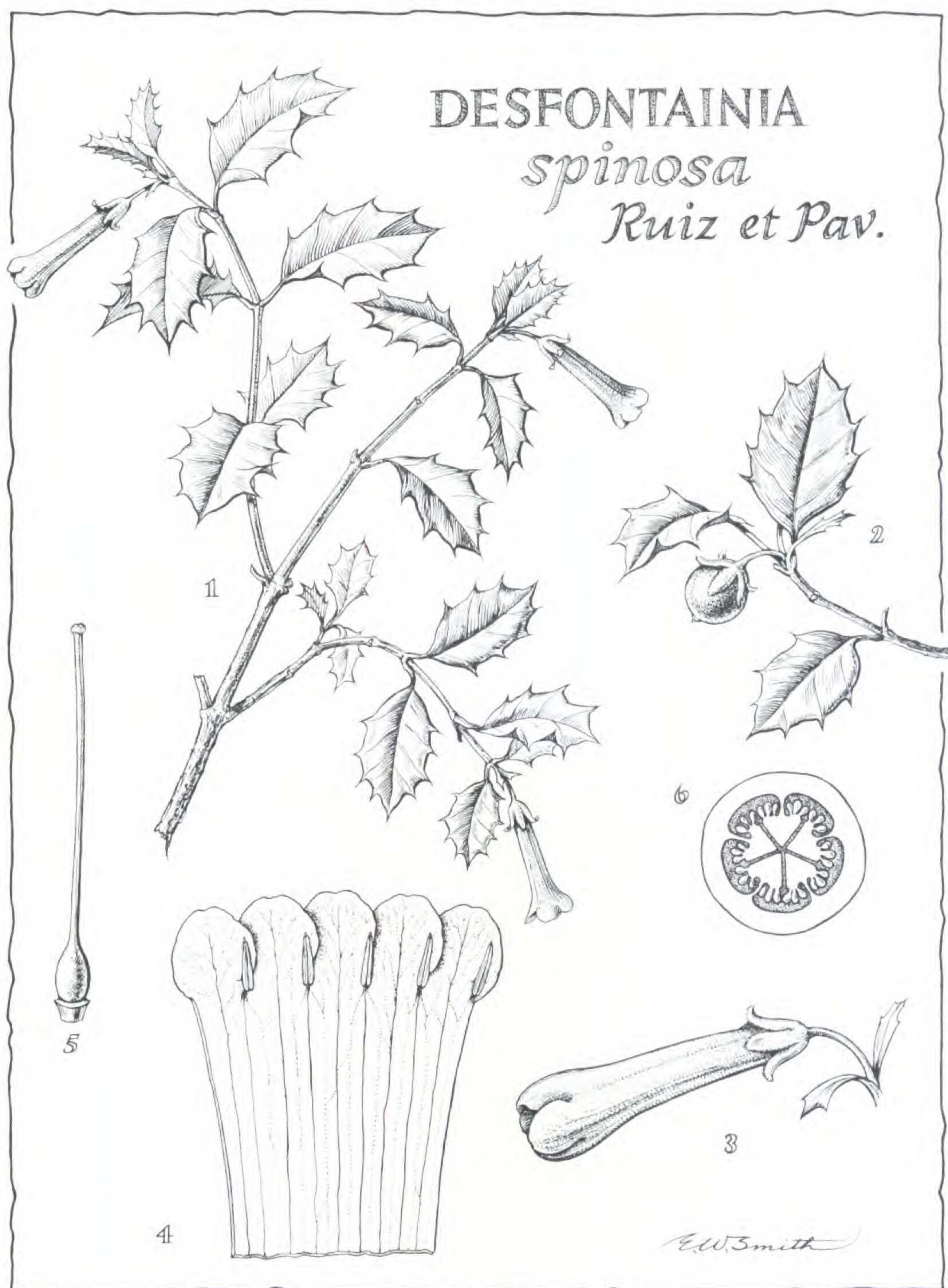
Although the genus *Desfontania* is regarded usually as comprising but two or three species, some eleven binomials have been described. All are Andean. The type species, *D. spinosa*, was collected near Churupallano, Tarma, or between Mūna and Pozuzo, Peru. It seems probable that some of the binomials proposed do represent synonyms of *D. spinosa*. Leeuwenberg has reduced all eleven species to synonymy under a highly variable *D. spinosa*, attributing the variability to altitudinal and ecological factors. He enumerated informally six "forms" (not recognizing them with Latin epithets) and a number of intermediates between the "forms," noting in summary that "the complexity of the variation is not yet completely described" by his enumeration. A preliminary survey of herbarium material of *Desfontainia* and familiarity with the variation in highland Andean floras combine to make me extremely dubious that such extraordinary variability can be treated simply as environmentally induced responses in a single species. Further taxonomic studies are needed to clarify this long standing enigma.

The two concepts upon which the reports of narcotic use are based are:

***Desfontainia spinosa* Ruíz et Pavón** Fl. Peruv. Chile 2(1799)47, t. 186.

***Desfontainia spinosa* Ruíz et Pavón** var. ***Hookeri* (Dun.) Voss** ex Vilmorin Blumengärtn, Ed. 3,1(1894)669.





EXPLANATION OF THE ILLUSTRATION

Plate 15. *Desfontainia spinosa* Ruíz et Pavón. 1) Flowering branch, x  $\frac{1}{2}$ . 2) Fruiting branch, x  $\frac{1}{2}$ . 3) Flower in bud, approximately, x 1. 4) Corolla, cut and unrolled, x approximately  $1\frac{1}{4}$  x. 5) Pistil, x approximately  $1\frac{1}{2}$ . 6) Cross section of ovary, x approximately 7.

Drawn by E. W. Smith





DESFONTAINIA *spinosa* Ruiz et Pavón

EXPLANATION OF THE ILLUSTRATION

Plate 16. The original illustration of the type species, *Desfontainia spinosa* Ruiz et Pavón, published with the description of the species.